WHITEPAPER

Choosing the Proper Medium Voltage Potential Transformer for Your Metering Application

Metering applications typically rely on potential transformers for measuring voltages over 600V and are available in models ranging from 5kV to 34.5kV. The potential transformer (also known as voltage transformer) is used to convert the high primary voltages to a measurable 120Vac secondary voltage, which is the common input for most metering devices.

Typical metering devices compatible with a medium voltage potential transformer include:

- Digital voltmeters (eg. DL-40PSF-DR-PS1-IA01)
- Analog switchboard meters that provide indication of the primary system voltage (eg. HLS110)
- Multifunction meters that measure power and energy like kilowatts or kilowatt-hours

The following parameters should be considered when choosing a medium voltage potential transformer for your application:

1. Will your potential transformer be used indoors or outdoors?
2. What is the primary system voltage?
3. Frequency requirement (eg. 50Hz or 60Hz).
4. Accuracy class (eg. 0.3WXMYZ, 50va CL0.5).
5. Type of connections needed (eg. 3P3W, 3P4W, open delta or wye-wye connections)?
6. Thermal rating.
7. Standards (eg. ANSI/IEEE or IEC).
8. Other (eg. primary and secondary fuses, fuse clips only, etc.).

The first choice will be whether your application requires an indoor or outdoor rated potential transformer followed by the voltage class.

Indoor Medium Voltage Potential Transformers

5kV Class Indoor Potential Transformers

- The PT3 is a 5kV rated potential transformer with 45kV BIL; and the two bushing PT3-2 can be connected for open-delta applications, while the single bushing PT3-1 are for wye-wye connections.

  Typical voltage ratios are 2400:120V (20:1), 4200:120V (35:1) and 4800:120V (40:1). The PT3-2-45-332FF is rated 3300:110V, 30:1 and rated 50Hz.

  The PT3 model is suitable for revenue grade metering applications.

- The 3PT3-60 is a three phase 5kV rated potential transformer with 60kV BIL in open delta configuration suitable for 3-phase 3-wire systems.

  The 3PT3-60 model comes complete with primary fuses and have voltage ranges from 840V up to 4800V.

  The 3PT3 model is suitable for revenue grade metering applications.

15kV Class Indoor Potential Transformers

- The PTG5 is a 15kV rated potential transformer with 110kV BIL. This medium voltage PT is available as two bushing PTG5-2-110 for open delta connections and the single bushing PTG5-1-110 for wye-wye connections.

  Voltage ranges from 7200V to 14400V, 60Hz and have accuracy class of 0.3WXMYZ, 1.2ZZ at 100% rated voltage with 120V based ANSI burden.

  The thermal rating of the PTG5 is 1500VA at 30°C ambient and comes complete with primary fuses.

The PT3, 3PT3 and PTG5 are generally housed in medium voltage switchgears on withdrawable compartments and are equipped to provide the necessary voltage signals to the metering device that displays the primary system voltage values for monitoring the condition of the overall electrical systems. These models are UL recognized and have CSA approval.

Outdoor Medium Voltage Potential Transformers

5kV Class Outdoor Potential Transformers

- The JVW-3 is a 5kV potential transformer with 60kV BIL.

  Voltage options include 2400:120V, 4200:120V and 4800:120V and can be used for both open delta and ungrounded wye connections. Frequency is rated for both 50/60Hz.

  The thermal rating of the JVW-3 is 750VA at 30°C ambient and an accuracy of 0.3WXMY, 1.2Z.

  The body is made of butyl rubber which is an excellent weatherproof material.

15kV Class Outdoor Potential Transformers

- The JVW-5C is a 15kV outdoor rated potential transformer which is manufactured using Hydrophobic Cycloaliphatic Epoxy (HCEP) that provides long lasting performance and reliability for outdoor applications.

  Manufactured to meet ANSI/IEEE C57.13 requirements and is suitable for operating meters, instruments, relays and control devices.

  The JVW-5C is available in a single bushing style for grounded wye application or a double bushing style for open delta and ungrounded wye applications.

  The single bushing model has a voltage range from 7200/12470GY to 8400/14560GY while the double bushing model has a voltage range from 7200/12470Y to 14400/14400Y with a metering accuracy class of 0.3WXMYX, 1.2ZZ.

Flex-Core maintains a large inventory of 5kV and 15kV models and are available for immediate shipment.

Medium voltage potential transformers are also available in 25kV and 34.5kV models and are made-to-order with typical lead times of 4-5 weeks ARO.

Non-standard voltage ratios and IEC rated potential transformers can be custom designed to meet specific customer requirements.